The effectiveness of self-help mindfulness-based cognitive therapy in a student sample: A randomised controlled trial

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Abstract

Objective: Mindfulness-based cognitive therapy (MBCT) involves approximately twenty hours of therapist contact time and is not universally available. MBCT self-help (MBCT-SH) may widen access but little is known about its effectiveness. This paper presents a randomised controlled trial (RCT) of MBCT-SH for students.

Method: Eighty students were randomly assigned to an eight-week MBCT-SH condition or a wait-list control.

Results: ANOVAs showed significant group by time interactions in favour of MBCT-SH on measures of depression, anxiety, stress, satisfaction with life, mindfulness and self-compassion. Post-intervention between-group effect sizes ranged from Cohen's *d*=0.22 to 1.07. Engagement with MBCT-SH was high: participants engaged in mindfulness practice a median of two to three times a week and 85% read at least half the intervention book. Only 5% of participants dropped out.

Conclusions: This is the first published RCT of MBCT-SH and benefits were found relative to a control group. MBCT-SH has the potential to be a low-cost, readily available and highly acceptable intervention. Future research should include an active control condition and explore whether findings extend to clinical populations.

Keywords

MBCT, mindfulness, students, bibliotherapy, self-help

Introduction

Mindfulness has been defined as "the awareness that emerges through paying attention on purpose, in the present moment, and non-judgementally to the unfolding of experience moment by moment" (Kabat Zinn, 2003, p. 145). It involves learning to self-regulate one's attention and to orientate to the present with openness, curiosity and acceptance. Mindfulness-based cognitive therapy (MBCT; Segal, Williams & Teasdale, 2002) is an eight-week group intervention with sessions lasting 2 to 2½ hours. Participants are invited to engage in mindfulness practices in session and at home and learning from these practice is drawn out through group discussion. Originally designed as a relapse prevention intervention for depression, MBCT has been shown to halve the risk of relapse for people who have had three or more episodes of depression (Kuyken et al., 2008; Ma & Teasdale, 2004; Segal et al., 2010; Teasdale et al., 2000). Recent studies suggest MBCT can also reduce symptoms of a current episode of depression (Barnhofer et al., 2009; Strauss, Cavanagh, Oliver & Pettman, 2014; van Aalderern et al., 2012) with comparable effects to group CBT (Manicavasagar, Parker & Perich, 2011) and can be effective for certain anxiety disorders (Evans et al., 2008; Lovas & Barsky, 2010; Mcmanus, Surawy, Muse, Vazquez-Moules & Williams, 2012; Piet, Hougaard, Hecksher & Rosenberg, 2010).

MBCT is recommended by clinical guidelines (e.g. National Institute of Health and Care Excellence, 2004), but its implementation has been slow partly due to resource pressures and its reliance on trained MBCT teachers (Crane & Kuyken 2012). Widening access through self-help is one way of addressing this lack of availability. MBCT self-help (MBCT-SH) resources including books, CDs, phone apps and online packages are easily accessible and popular. However, while there is evidence that self-help cognitive behavioural therapy (CBT-SH) is effective for depression (Gregory, Canning, Lee & Wise, 2004) and anxiety disorders (Lewis, Pearce & Bisson, 2012), little is known about the effectiveness of

MBCT-SH. Although research into MBCT-SH is in its infancy, there is emerging evidence that self-help books based on Acceptance and Commitment Therapy (ACT), an approach which includes mindfulness principles, can improve anxiety and depression in community (Fledderus, Bohlmeijer, Pieterse & Schreurs, 2011) and student (Muto, Hayes & Jeffcoat, 2011) populations. Similarly, a recent meta-analysis of self-help interventions that included mindfulness and/or acceptance components found they led to significantly lower symptoms of anxiety and depressive in comparison to control conditions (Cavanagh, Strauss, Forder & Jones, 2014). Many studies of self-help include a degree of therapist support, but a meta-analysis of CBT-SH found that therapist support did not appear to improve outcomes (Farrand & Woodford, 2013) and unsupported self-help has the potential to further increase access given its minimal demands on resources.

The aim of the current study was to examine the effectiveness of unsupported MBCT-SH for students. Primary hypotheses were that MBCT-SH in comparison to a wait-list control condition would lead to reductions in symptoms of anxiety, depression and stress and improvements in life satisfaction, mindfulness and self-compassion.

Method

Design

This was a single-blind randomised controlled trial with an intervention group receiving MBCT-SH and a wait-list control group. Ethical approval was obtained from the host university ethics committee and participants received an information sheet and gave their consent before taking part

Participants

A power calculation using G*Power (Faul, Erdfelder, Lang & Buchner, 2007) with p=.05 and power set at 80% showed that 68 participants would be needed to detect comparable effect sizes to those reported in a similar study of ACT bibliotherapy in a non-clinical sample (Fledderus et al., 2011). Eighty student participants were recruited to allow for up to 15% attrition. The inclusion criteria were for participants to: (i) be an undergraduate or postgraduate at the host UK university; (ii) score at least 6.5 on the International English Language Testing System (IELTS); (iii) be 18 years or older; and (iv) have the means to listen to a CD. Individuals were excluded if they: (i) were receiving psychological therapy; (ii) already practised mindfulness meditation regularly (once a week or more); or (iii) had already read the intervention book. The mean age of participants was 28.61 years (SD=9.12), 81% were female and 86% were of white ethnicity. Around half (54%) were post-graduates and most (84%) were studying full-time. There were no significant baseline differences between intervention and control participants on any demographic (Table 1) or dependent variables (Table 2).

[Table 1 here]

[Table 2 here]

Measures

Depression Anxiety and Stress Scales- Short Form (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 is a 21-item measure of depression, anxiety and stress (seven items per scale). Items are rated over the past week from 0 to 3 and summed for each subscale then doubled. The cut off scores for mild levels of depression, anxiety and stress are 10, 8 and 15 respectively. The scale has high internal consistency for the depression (α=0.88), anxiety (α=0.82), and stress (α=0.90) scales and good discriminant and convergent validity (Henry & Crawford, 2005)).

Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen & Griffin., 1985). The SWLS is a five-item measure of global life satisfaction rated on a 1-7 scale and summed to give a total score. The scale has high internal consistency (α=0.87) and good convergent and discriminant validity (Pavot & Diener, 1993).

Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer & Toney., 2006). The FFMQ consists of 39 items, rated on a 1-5 scale, assessing five facets of mindfulness: *observing*, *describing*, *acting with awareness*, *non-judging* and *non-reactivity*. The FFMQ subscales have good internal consistency (α=0.75-0.91) and are sensitive to change (Carmody & Baer, 2008).

Self-Compassion Scale- Short Form (SCS-SF; Raes, Pommie, Neff & Van Gucht, 2011). This is a 12-item measure of self-compassion, a potential mechanism of change in MBCT (Kuyken et al, 2010). Item ratings from 1-5 are summed to give a total score. Raes et al. (2011) report high internal consistency (α=0.86) for the scale and a near perfect correlation (*r*=0.98) with the long form.

Engagement. Engagement with the MBCT-SH intervention was measured by self-report at the end of the intervention as the number of book chapters read and frequency of mindfulness practice per week of the intervention.

Intervention

The intervention was the MBCT-SH book "Mindfulness: A practical guide to finding peace in a frantic world" (Williams & Penman, 2011). It was chosen as it is lead-authored by Mark Williams, one of the creators of MBCT, and closely adheres to the core elements of MBCT. It also was explicitly designed for people experiencing stress, low mood and anxiety in the general population.

The book starts with an introduction, followed by eight intervention chapters each based on the equivalent session in the therapist-led MBCT course. Readers are asked to read one intervention chapter a week and to practise a series of 20-30 minute meditations from the book's accompanying CD. The first four intervention chapters teach readers to attend to their internal and external world, and to use the 'Three-minute Breathing Space' meditation to ground themselves when they feel stressed. The remaining four chapters provide practical ways to see thoughts as mental events and to cultivate an attitude of acceptance, compassion and empathy.

Procedure

Participants were recruited via posters around the university campus inviting students with experience of stress, anxiety or low mood to take part. A researcher independent to the research team and blind to participant details conducted randomisation by stratifying participants according to DASS-21 stress scores and applying block randomisation in blocks of four. The stress subscale was used for stratification because it correlates more highly with the anxiety and depression subscales than they correlate with each other (see Henry & Crawford, 2005). Participants randomised to MBCT-SH were given a copy of the book after randomisation. They were sent automated weekly email reminders to read the next chapter and had no other contact with the research team. This helped to reduce possible bias from researcher involvement following randomisation. Measures for all participants were administered prior to randomisation (T1) and after the eight-week intervention (T2) with ten-week follow-up data also collected for intervention participants (T3). Follow-up data for wait-list participants were not available as they were given a copy of the MBCT book immediately following T2 to thank them for participating (it was felt that requiring them to wait until T3 before receiving their book would be unethical). Measures were completed

online; evidence suggests this produces comparable results to in-person administration (Herrero & Meneses, 2004) and this method is not subject to assessor bias.

[Figure 1 here]

Analysis

Data were screened for outliers. Intention-to-treat Analysis of Variances (ANOVAs) tested the study hypotheses using the baseline-observation-carried-forward method to replace missing data. Group x time interactions on the dependent variables were the primary outcome. Significant group x time interactions were explored with post-hoc t-tests on between-group post-intervention differences and within-group t-tests. Reliable change on DASS subscales was calculated using the method outlined by Jacobson and Truax (1991) with norms from Lovibond and Lovibond (1995). This gives the percentage of participants in each condition who showed greater improvement in their depression, anxiety and stress scores than would be expected than due to measurement error. A study CONSORT diagram is shown in Figure 1.

Results

One person was excluded from the analysis as they were an outlier at baseline on the DASS anxiety scale (3.14 sd from mean). Table 3 summarise results and shows effect sizes.

[Table 3 here]

Outcome Measures: Depression, Anxiety, Stress and Satisfaction with Life

Mixed ANOVAs showed significant group x time interactions in favour of MBCT-SH for DASS anxiety ($F(1,77)=4.01$, p=.049), depression ($F(1,77)= 4.32$, $p=.041$) and stress ($F(1,77)=9.89$; $p=.002$) scores. Post-hoc tests showed significant post-intervention between-

group differences in favour of MBCT-SH on DASS anxiety (t(77)=2.50, d=0.56 95% CI=0.11-1.01, p=.015), depression (t(77)=2.07, d=0.48 95% CI=0.02-0.91, p=.042) and stress (t(77)=2.56, d=0.58 95% CI=0.13-1.03, p=.012) subscales. Within-group t-tests showed that participants in both conditions improved on DASS anxiety, depression and stress subscales with the significant interaction effects demonstrating that improvement was significantly greater in the MBCT-SH condition (t(39)=4.95, 4.16 and 6.33; d=0.69 (95% CI=0.38-1.01), 0.62 (95% CI=0.30-0.95) and 1.07 (95% CI=0.66-1.48) respectively; p<001 in all cases) than in the control condition (t(38)=2.16, 2.55 and 2.64; d=0.28 (95% CI=0.02-0.45), 0.19 (95% CI=0.04-0.40) and 0.33 (95% CI=0.07-0.58); p=.037, .015 and .012 respectively).

More participants in the MBCT-SH condition than control condition showed reliable pre-post intervention improvement on the DASS depression (70% and 46%), anxiety (63% and 38%) and stress (72% and 36%) scales.

For SWLS scores there was a significant group x time interaction in favour of MBCT-SH (F(1,77)=17.47; p<.001). Post-hoc tests showed significant between-group differences at post-intervention favouring MBCT-SH (t(77)=2.48; d=0.56 95% CI=0.11-1.01, p=.015) and within-group t-tests showed significant improvement in SWLS scores in the MBCT-SH group (t(39)=-5.95, d=0.74 95% CI=0.45- 1.03, p<.001) but not in the control group (t(38)=-0.915, d=0.07 95% CI=-0.08-0.23, p=.37).

Mindfulness and Self-compassion

For the FFMQ total score there was a significant group x time interaction in favour of MBCT-SH (F(1,77)=23.22; p<.001) and post-hoc tests confirmed significant between-group post-intervention differences (t(77)=4.48, d=1.01 95% CI=0.54-1.48, p<.001). Within-group t-tests found significant improvements in FFMQ scores for MBCT-SH participants (t(39)=-7.18, d=1.16 CI 95% 0.75-1.57, p<.001) and control participants (t(38)=-2.16, d=0.23 95%

CI=0.02-0.45, *p*=.037). For FFMQ subscale scores ('observe', 'describe', 'act with awareness', 'non-judgement' and 'non-react') there were significant group x time interactions on all subscales apart from the 'describe' subscale (*F*(1,77)=11.59, 2.76, 17.16, 14.29 and 10.05; *p*=.001, p=0.10, *p*<.001, *p*<.001 and *p*=.002 respectively). Post-hoc tests showed significant between-group post-intervention differences in favour of MBCT-SH for all FFMQ subscales apart from 'describe' (*t*(77)=3.83, 0.96, 3.73, 2.50 and 4.74; d=0,86 (95% CI=0.40-1.32), 0.22 (95% CI=-0.23-0.66), 0.84 (95% CI=0.38-1.30), 0.56 (95% CI=0.11-1.01) and 1.07 (95% CI=0.60-1.54); p<.001, p=.341, *p*<.001, *p*=.014 and *p*<.001 respectively). Within-group t-tests showed significant improvement on all FFMQ subscales for MBCT-SH participants (*t*(39)=-4.74, -4.08, -6.28, -6.20, -5.77; *d*=0.70 (95% CI=0.37-1.02), 0.51 (95% CI=0.24-0.78), 0.87 (95% CI=0.53-1.20), 1.08 (95% CI=0.66-1.50) and 0.97 (95% CI=0.58-1.37); all *p*<.001 respectively) while there were no significant improvements on FFMQ subscales in the control condition with the exception of the 'non-react' subscale (*t*(38)=-0.86, -2.01, -0.59, -0.76 and -2.56; *d*=0.09 (95% CI=-0.12-0.33), 0.24 (95% CI=0.00-0.48), 0.08 (95% CI=-0.18-0.34), 0.11 (95% CI=-0.18-0.40) and 0.38 (95% CI=0.08-0.68); *p*=.397, .051, .557, .452 and .015 respectively).

For self-compassion there was a significant group x time interaction in favour of MBCT-SH (*F*(1,77)=18.84, *p*<.001) and post-hoc tests showed significant post-intervention between-group differences in favour of MBCT-SH (*t*(77)=3.01, *d*=0.68 95% CI=0.22-1.13, *p*=.004). Within-group t-tests showed significant improvements in self-compassion in the MBCT-SH condition (*t*(39)=-6.29, *d*=1.08 95% CI=0.67-1.49, *p*<.001) but not in the control condition (*t*(38)=-1.89, *d*=0.20 95% CI=-0.01-0.40, *p*=.066).

Follow-up of MBCT-SH Participants

There were no significant changes for MBCT-SH participants on any measures from post-intervention to their ten-week follow-up ($t(39)$=0.84 to 1.92, all ns), indicating maintenance of change.

Drop-out and Engagement

Only four randomised participants (5%) failed to complete post-intervention measures. Twenty-three of the forty MBCT-SH participants read the whole book (57.5%) and 34 read at least half (85%), a comparable engagement outcome to the 50% session attendance used in MBCT research (e.g. Ma & Teasdale, 2004; Teasdale et al., 2000). The median number of times intervention participants reported practising mindfulness meditation during the intervention was 2 to 3 times a week with a median practice time of 10-20 minutes per practice. At the ten-week follow-up, 32 of the 40 MBCT-SH participants (80%) reported they were still practising mindfulness with over half (57.5%) reporting practising at least once a week. No adverse events were reported.

There was no significant association between the number of intervention chapters read and improvement on DASS depression ($r(38)$=-.03, p=.85), anxiety ($r(38)$=.08, p=.63) or stress ($r(38)$=.20, p=.23) subscales or between frequency of mindfulness practice and improvement on these subscales ($r(38)$=.16, -.07 and -.001; p=.35, .67, .99 respectively).

Discussion

This is the first published RCT of MBCT self-help. Results showed significant reductions in depressive, anxiety and stress symptom severity for intervention participants in comparison to a wait-list control group with small to medium post-intervention between-group effect sizes. There were also significant improvements in life satisfaction, mindfulness and self-compassion, with medium to large effects. Over 60% of MBCT-SH participants

showed reliable improvement in depression, anxiety and stress symptom severity. Moreover, improvements for MBCT-SH participants were maintained at a ten-week follow-up. No therapeutic support was given to participants yet engagement was high; most MBCT-SH participants practised mindfulness more than once a week, even at the follow-up, and 85% read at least half the book.

Findings in Context

Consistent with the finding that students experience high levels of psychological distress (Royal College of Psychiatrists, UK, 2011) participants in this study had more severe symptoms of anxiety, depression and stress at baseline than those typically seen in non-clinical samples (Henry & Crawford, 2005), with mean baseline scores (Table 2) above the 'mild symptoms' cut off on all three subscales. While results cannot be generalised to clinical samples, effect sizes in this study on measures of anxiety and depressive symptom severity compare favourably to those reported in a meta-analysis of therapist-led mindfulness interventions with psychiatric and physical health populations (Hofman, Sawyer & Witt, 2010). Hofman and colleagues (2010) found medium pre-post effect sizes on measures of anxiety and mood symptom severity (Hedge's g =0.63 and 0.59, respectively), similar to the pre-post effect sizes found in the current study (Cohen's d=0.69 and 0.62 respectively). While it would be premature to suggest that MBCT-SH is as effective as therapist-led interventions, particularly given the different populations in the current study and the meta-analysis, MBCT-SH clearly shows promise and warrants further research.

MBCT is purported to produce benefits to mental health through improving mindfulness and self-compassion, that is, improvements in mindfulness and self-compassion are seen as an important mechanism of change in MBCT (Kuyken et al, 2010). Consistent with this, the current MBCT-SH intervention was effective at increasing mindfulness and

self-compassion with medium to large effect sizes (d=068-1.01), although this requires testing in a full mediation analysis.

Our findings add to the wider self-help literature showing the effectiveness of self-help bibliotherapy interventions for common mental health problems (e.g. Farrand & Woodford, 2013). This literature has traditionally been dominated by CBT interventions and only recently has been added to by approaches based on mindfulness and acceptance-based principles. The post-treatment between-group effect sizes in the current study for depression (d=0.48) and anxiety (d=0.56) compare favourably to those reported in a recent meta-analysis of self-help interventions including mindfulness or acceptance components (Hedge's g=0.37 and 0.34 respectively; Cavanagh et al., 2014). Findings also concur with growing evidence that unsupported self-help interventions, which require minimal resources, can be of benefit (Farrand & Woodford, 2013). Engagement with the study and intervention was high. Only five percent of participants failed to complete post-intervention measures, 85 percent of MBCT-SH participants reported reading at least half the book and on average participants reported following the mindfulness practices between two and three times each week. These findings show promise in comparison to other forms of self-help. The average attrition from internet-based self-help interventions is around one-third (Melville, Casey & Kavanagh, 2010) which means that online forms of self-help may fail to reach a wide audience through relatively high non-engagement. Engagement with book-based self-help may be higher than for internet-based interventions with Cuijpers (1997) reporting an average drop-out rate of around 7 percent, consistent with the rate in the current study, although this suggestion requires direct testing.

There was no significant association between engagement with the intervention (defined as the number of book chapters read and frequency of mindfulness practice) and improvements in depression, anxiety or stress severity. There was little variability in

engagement scores, with most participants reporting that they had read most of the chapters and practised mindfulness reasonably frequently. These ceiling effects on the engagement measures may explain the failure to find an association between engagement and outcome and in future studies more sensitive measures of engagement should be adopted.

Strengths and Limitations

There were limitations to this study. Firstly, Participants were UK university students who were young (mean age of 29 years), predominantly female (81%) and white (86%). This limits generalizability of findings to people with limited education, older age groups, males and people from diverse ethnic backgrounds and future research should evaluate the intervention in a sample more representative of the general population.

Secondly, while the unmet mental health needs of students have been highlighted (Royal College of Psychiatrists, UK, 2011), future research of MBCT-SH should be extended to clinical populations where participants are confirmed as meeting diagnostic criteria for an anxiety or depressive disorder. Third, the current study had a wait-list control group. In the absence of an active control it is not possible to rule out a number of alternative explanations for our findings including demand characteristics and non-specific factors. Given the large evidence-base for CBT bibliotherapy, future research could specifically compare MBCT-SH with CBT bibliotherapy in clinical settings to directly compare effectiveness and engagement.

Fourth, the accuracy of engagement reported by MBCT-SH participants was not corroborated. While reported engagement with reading the book and practising mindfulness was high, it is possible that this was subject to social desirability effects. In future, additional ways of measuring intervention adherence would be advantageous such as using multiple

choice quizzes to test participants' knowledge of the book content (see Jeffcoat & Hayes, 2012 for an example).

Fifth, the field of mindfulness research is compromised by problems measuring mindfulness itself. Almost all research in the area relies on self-report measures, with the FFMQ (as used in the current study) seen as the 'gold standard' (Baer et al., 2006). However, the content of these measures closely reflects the content of mindfulness-based interventions so it is possible that participants score more highly at the end of an intervention because they have become familiar with the concepts and terminology rather than because they have become more mindful. There is therefore a need to develop a measure of mindfulness that can overcome this limitation.

Finally, while improvements in mindfulness were found for MBCT-SH participants relative to controls, consistent with the suggestion that mindfulness was a mechanism of change, as data were not collected at multiple time points, a full mediation analysis was not possible. Therefore, we cannot conclude that improvements in mindfulness mediated improvements in mental health and wellbeing. A test of mediation should be the focus of future research.

Clinical and Research Implications

This study provides evidence for the effectiveness MBCT-SH in a student sample. MBCT bibliotherapy is inexpensive and could be offered to students experiencing mental health difficulties as a first line intervention. This could help increase access to psychological support for students and would respond to calls for greater use of self-help therapies with this population (Royal College of Psychiatry, 2011).

While findings cannot be generalised to clinical populations where therapist support may be more vital, with further research MBCT-SH may prove to offer benefits beyond student populations. With resource pressures and the reliance on dedicated MBCT teachers cited as key barriers to the implementation of MBCT in mental health services (Crane & Kuyken, 2012), MBCT-SH could play an important role in helping widen access.

Conclusions

This is the first published RCT of mindfulness-based cognitive therapy (MBCT) self-help. Findings show promise as intervention participants showed significant decreases relative to controls in anxiety, depression and stress symptom severity and significant improvements in life satisfaction, mindfulness and self-compassion. Engagement with the intervention was high, despite the lack of therapist support. These findings pave the way for future research of MBCT-SH and suggest that it may be of real benefit to people experiencing anxiety, depression and stress.

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Table 1. Demographic characteristics of participants.

	MBCT self-help n=40	**Control group n=39**	**Total n=79**	**Between-group Comparison**
Gender n (%)				
Female	31 (77.5)	33 (84.6)	64 (81.0)	χ^2=.65, *p*=.420
Male	9 (22.5)	6 (15.4)	15 (19.0)	
Total	40 (100.0)	39 (100.0)	79 (100.0)	
Ethnicity n (%)				
White	33 (82.5)	35 (89.7)	68 (86.1)	χ^2=.86 *p*=.352
Non-white	7 (17.5)	4 (10.3)	11 (13.9)	
Total	40 (100.0)	39 (100.0)	79 (100.0)	
Student n (%)				
Undergraduate	16 (40.0)	20 (51.3)	37 (45.6)	χ^2=1.01 *p*=.314
Postgraduate	24 (60.0)	19 (48.7)	43 (54.4)	
Total	40 (100.0)	39 (100.0)	79 (100.0)	
Studying n (%)				
Full-time	32 (80.0)	34 (87.2)	66 (83.5)	χ^2=.74 *p*=.390
Part-time	8 (20.0)	5 (12.8)	13 (16.5)	
Total	40 (100.0)	39 (100.0)	79 (100.0)	
Age mean (sd)	30.50 (10.78)	26.67 (6.75)	28.61 (9.16)	*U*=646.0, z=-1.32, *p*=.188

Table 2: Between-group differences on dependent variables at baseline.

	MBCT self-help n=40	**Control group n=39**	**Between-group t (p)**
DASS-21 mean (sd)			
Anxiety/42	9.80 (6.84)	11.13 (8.27)	-1.09 (.28)
Depression/42	14.95 (10.53)	15.90 (10.81)	-0.48 (.63)
Stress/42	21.75 (7.11)	21.38 (8.12)	-0.06 (.96)
SWLS mean (sd)			
Total/35	19.13 (6.38)	19.51 (7.60)	-0.40 (.69)
FFMQ mean (sd)			
Observe/40	24.15 (6.22)	22.64 (5.12)	1.06 (.29)
Describe/40	24.38 (6.28)	24.85 (6.26)	-0.27 (.79)
Act Awareness/40	20.33 (6.43)	20.13 (6.62)	0.26 (.80)
Non-judgement/40	20.67 (5.80)	22.51 (7.13)	-1.01 (.31)
Non-reacting/35	17.38 (5.07)	16.03 (3.61)	1.40 (.17)
SCS-SF mean (sd)			
Total/60	28.30 (8.23)	29.74 (8.32)	-0.56 (.58)

DASS-21: Depression, Anxiety and Stress Scales (short form); SWLS: Satisfaction with Life Scale; FFMQ: Five Facet Mindfulness Questionnaire; SCS-SF: Self-Compassion Scale (short form)

Table 3: Intention-to-treat means, standard deviations, effect sizes and F tests before and after MBCT-SH.

		MBCT-SH n=40		Control group n=39		Group x time F	d (Post-MBCT between-group)
		pre mean (sd)	post mean (sd)	pre mean (sd)	post mean (sd)		
DASS-21	Anxiety	9.80 (6.84)	5.40 (5.57)	11.13 (8.27)	9.23 (7.90)	4.01*	0.56
	Depression	14.95 (10.53)	8.80 (8.85)	15.90 (10.81)	13.44 (11.00)	4.32*	0.48
	Stress	21.75 (7.11)	13.40 (8.38)	21.38 (8.12)	18.46 (9.16)	9.89**	0.58
SWLS	Total	19.13 (6.38)	23.97 (6.66)	19.51 (7.60)	20.08 (7.33)	17.47***	0.56
FFMQ	Total	106.90 (18.71)	131.73 (23.48)	106.15 (18.28)	111.00 (17.02)	23.22***	1.01
	Observe	24.15 (6.22)	28.47 (6.15)	22.64 (5.12)	23.18 (6.13)	11.59***	0.86
	Describe	24.38 (6.28)	27.57 (6.38)	24.85 (6.26)	26.28 (5.57)	2.76	0.22
	Act aware	20.33 (6.43)	26.05 (6.78)	20.13 (6.62)	20.64 (6.07)	17.16***	0.84
	Non-judge	20.67 (5.80)	27.60 (6.86)	22.51 (7.13)	23.38 (8.07)	14.29***	0.56
	Non-react	17.38 (5.07)	22.03 (4.42)	16.03 (3.61)	17.51 (4.04)	10.05**	1.07
SCS-SF	Total	28.30 (8.23)	37.73 (9.18)	29.74 (8.32)	31.49 (9.27)	18.84***	0.68

** p<.05, ** p<.01, *** p<.001 DASS-21: Depression, Anxiety and Stress Scales (short form); SWLS: Satisfaction with Life Scale; FFMQ: Five Facet Mindfulness Questionnaire; SCS-SF: Self-Compassion Scale (short form)*

Figure 1: CONSORT diagram